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M A T T E R.

IN FIVE CHAPTERS.

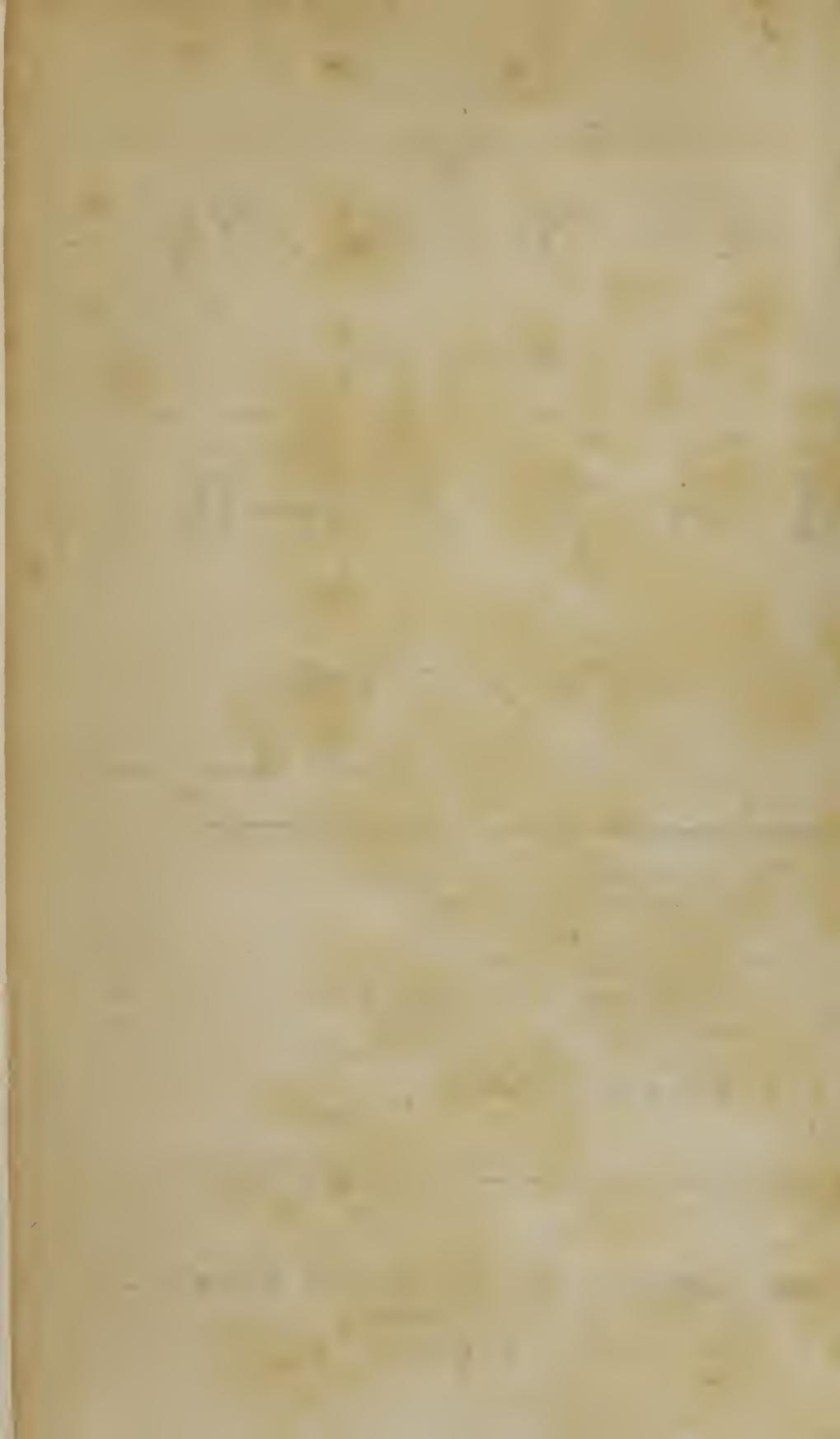
attributed to Dr Benjamin Rush

Trace Science then, with modesty thy guide,
First strip off all her equipage of pride;
Deduct what is but vanity, or dress,
Or learning's luxury, or idleness;
Or tricks to shew the stretch of human brain,
Mere curious pleasure, or ingenious pain:
Expunge the whole, or lop th' excrecent parts
Of all, our vices have created arts.

POPE.

PHILADELPHIA: PRINTED FOR THE AUTHOR.

M, DCC, LXXXIV.



A P O L O G Y.

THE Author begs leave to remark to his Reader, that his Thoughts upon Matter are here placed in the order in which they were conceived; and that when he had written the first and second Chapters, he had not anticipated the last, or even the two following: that he had never read any Author who had considered Matter in this way, whereby to fashion his mind to a system, nor did he even know that thoughts similar to these, had ever been conceived.

The Reader, therefore, will enjoy the advantage of having his ideas on the subject, excited in the same order that the Author's were, which he considers most natural, therefore best; the subject growing out of itself. Indeed he considered words as being the most imperfect signs of thoughts; of course, the most common source of imposition: he, therefore, cautiously avoided any information upon his subject from that source, lest, instead of acquiring information, he should imbibe prejudice; and depended upon reason alone for truth.

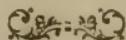
When the Author had done what is contained in this Treatise, a severe illness put a stop to further progress in the work, and thereby prevented him not only from giving a better arrangement to this Dissertation, but also from showing how the theory of it would apply in practice, which he, perhaps too vainly, considered would be important information to mankind.

After waiting many months, the Author finds his indisposition so obstinate as to make him despair, at least for a long time, of recovering that health of body and vigour of mind, which is required for such an arduous work. The Reader, therefore, will find in it a great deal of matter only proposed to his mind,

A P O L O G Y.

not finished for it; but if he have been in the habit of thinking closely upon things, the hints may be sufficient; if not, perhaps the most prolix manner would afford but little information to the mind of indolence.

The Author is aware that his subject has the prejudices of mankind to combat; he the more regrets that he is obliged to expose it to them in this imperfect state: but if his health and private concerns of life will hereafter permit, he promises the subject all the advantages which so weak a supporter can give it. In the mean while he hopes that some generous and stronger mind than his, may anticipate this necessity, and do the subject justice.



C O N T E N T S.

C H A P. I. *Matter simply considered.*

C H A P. II. *Matter as connected with the vital Principle.*

C H A P. III. *The Generation and Change or Death of Matter.*

C H A P. IV. *The finer Composition and Action of Matter.*

C H A P. V. *The Earth.*

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ESSAY ON MATTER.

C H A P. I.

MATTER SIMPLY CONSIDERED.

See thro' the air, this ocean, and this earth,
All Matter quick, and bursting into birth.

POPE.

THE term Matter includes every thing that we can possibly see, hear, feel, taste, or smell. Our minds can have no information or conception of that which is not material. A complete division of matter is impossible, and to our subject unnecessary: it is of its general principles only that we mean to treat.

We shall therefore observe, first, the Combination of Matter, secondly, its Motion, and thirdly, its Duration.

It is generally known what in Chymistry is meant by Affinity. On this principle not only the union of all compound bodies depends, but also their consistence and form.

The Union of Bodies is of different kinds, or what we shall name Perfect and Imperfect. The imperfect may include those bodies which, after union, maintain ALL their primary qualities unchanged. The perfect those whose small and imperceptible parts, when united, apparently lose their primary form and quality.

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We can separate the component Parts of Bodies until we come to what, from the imperfection of our senses, we are obliged to call FIRSTS, which in reality they are not, being themselves compounds. The particles of matter which enter into their composition, are so small, and bear so much nearer relation and likeness to each other, that our eyes are eluded in the search. There is no body but what is a compound.

We find ourselves capable of compounding any two Firsts: Of which compound we can form another, and add compound to compound without end; for every new compound makes the mass grosser, and thereby fits it to unite with grosser things. As we know no end of compounding, so it follows that we can know no beginning.

MATTER CANNOT WASTE. Philosophy and Reason can allow nothing supernatural to happen in this world, as it carries with it an idea of imperfection in Omnipotence, which is both impious and absurd.—I cannot then imagine what motives could have induced mankind to entertain notions of the perishable nature of Matter. They seem to speak of it too as a natural effect of things, and not miraculous. Making things into nothing requires no less power, and is not less miraculous, than making nothing into things. To suppose that Matter could waste or perish, and that this is constantly happening, must carry with it the supposition, that Matter must be constantly creating **DE NOVO**, which is taking from the Deity the attribute of omnipotence.

Can that power be omnipotent, which requires time for it's operation? Can that wisdom be infinite, which observes imperfections in it's own works, and sees a necessity for alterations? Infinite wisdom knew at first what was necessary to be done, and there could have been no space between conceiving and doing in infinite.

If, to use words which are adapted to our own capacities and not to things, I may be allowed to speak of a beginning where there was none, I would say, that when the Creator first conceived the design of creation, he must at that instant have conceived the whole design; and his power was ready, at that instant, to speak that whole into existence: nothing after that could be necessary.

C H A P. II.

MATTER AS CONNECTED WITH THE VITAL PRINCIPLE.

WHERE there is Motion in one Particle of Matter, or in a number of Particles of Matter, making what we call BODY, and the motion of this particle or body is independent, i. e. not influenced or actuated by any other particle or body to motion simply, there is LIFE. We do not include that influence, which all bodies receive from the elements, either, primarily, from themselves, or, secondarily, through the medium of some other matter or body. All Matter is possessed of life, spirit, action, or motion. What is called inanimate Matter, owes it's motion or life no more to the elements, than what is acknowledged to be animate.—This elementary influence presupposes the animation of bodies; for as these cannot move without that influence, so neither can that influence, where there is no life.—To say that the elements alone give motion, is to say that the elements give life, which is denying an UNIVERSAL AGENT, or making him appear to act more by intermediate agents, than Philosophy will allow.

No one, I presume, will doubt the independent Motion of Matter in that form which we name Animal, at least that it is as independent as in men.—We allow animals to be a composition of Matter without SOUL, yet we allow them to be

be possessed of the principle of motion. It is from this motion solely, that we allow them to be possessed of life; for there is nothing besides, that can or does influence the mind to make it assent to this truth, that **ANIMALS HAVE LIFE**; and it is from the different combinations of motion and matter, that we form our ideas of the different kinds of animals.—It is then from motion, and nothing else, that we judge of and allow Matter, of a particular kind of composition, to be possessed of the living principle—the same evidence must have the same weight in every other kind of composition.

Wherever Motion is discoverable in Matter, be the form of it what it may, we must acknowledge it to entertain the living principle. But it may be said, that though motion be an evidence of life in matter of certain forms, and where the motion is of certain kinds, yet motion of every kind will not prove the existence of life in matter of every form. This absurdity of supposing a **CAPUT MORTUUM*** must appear to every one who considers the connection and dependence which exist in all bodies upon each other,—the motion which this connection supposes,—and life which motion evidences. There is a perpetual exchange of matter with matter of every form. The animal creation, for instance, is constantly exchanging parts with the earth and its atmosphere. If the matter composing animals be animate, and that of the earth inanimate, how can these be united? This would be to suppose that two opposites could exist in one body, whereas it is the nature of opposites to recede from each other, and nothing can be greater opposites than life and death.

The independent Motion of Matter in that form called Vegetable, can be as little doubted as in Animals.—Storms, earthquakes, fires, floods, do not cause vegetation, any more than they do generation in animals. The natural or preter-

* If any one could prove to me the Annihilation of any Matter, be it ever so small, they would have no difficulty in proving to me, my own Annihilation, which, until then, I am by no means willing to grant.

preternatural motion of bodies, no more contribute to the motion of matter in vegetables than in animals ; they, like us, receive only the natural and gentle influence of the elements, and thereby make a link in that chain, which connects all matter, and which is the harmony of creation. We shall be more particular in speaking of motion in vegetables, when we come to treat of the nicer operation of matter in that action which we call Thinking.

We come now to speak of the Motion of Matter in those forms where it is less observable upon a superficial view of things; but where, upon a nearer view, it is not less evident than in either of the other forms mentioned.

Whoever doubts the Motion of Matter in the form of a Stone, let him take the trouble to look upon the first rock in his way, and he will see it's surface mouldering. Whatever decays must be replenished—**FOR MATTER CANNOT WASTE.**

Stones then give to and receive matter from other bodies. Circulation is a very perfect motion.—Will any one assert, that the motion of giving and receiving of it's substance does not exist in the stone with only that assistance which they, in common with us and animals, receive from the elements?

The Motion of Matter in the various forms of Minerals is more observable, as it is more lively. There is a constant fluctuation of matter in all mineral bodies.

When Miners open a mine, and do not find the ore they are in pursuit of, in the quantity and purity which they expected, they say **THE MINE IS NOT RIPE**, and close it up again that the metal may have time to grow.

If Matter have not the vital principle, then have I the power of creating.—The bulk of my form is increased by the matter

matter which, in the action of eating, inspiration, and absorption, I add to myself. If this matter have not the principle of life, how can I make it partake of me, and thereby partake of life? Can I unite dead and living things? Or, can they be united in me?

Chymists tell us that the Union of Bodies depends upon the Affinity, i. e. the likeness, which matter in one form, has to matter in another form, and tell us no further.

We have before mentioned the different kinds of Union produced by Affinity--the perfect and imperfect.—But what gives the quality of union, and preserves the existence of the compound? It is the living principle in one body, inclining it to associate with the living principle in another body. Without this living principle, that inclination, which supposes motion, could not exist.

Let me here give a case of Affinity,* where that operation happens in objects large enough to make it visible.—We observe that mankind incline to associate with mankind; the several tribes of animals with each other, in preference to those not of their kind: this is not from the election of form to form, but of action to action—this is called Affinity.

What Chymists call De-composition may be simply illustrated thus: If a Horse, wanting his natural companion, form an attachment to an Ox, and a third substance be added, namely, a horse, the first attachment is immediately dissolved; the one horse attaching himself to the other.

It is upon this principle only, that we can rationally account for the Action of Affinity.—I would, therefore, not have Chymists to say, that union depends upon the relation, affinity,

* This is an instance of the imperfect Action of Affinity. The perfect affinity is the union of the various matter in one entire organized body; but this will be illustrated, when we speak of the nicer operation of matter.

affinity, or likeness, which matter in one form, has to matter in another; but upon the relation, affinity, or likeness, which the living principle in one form of matter, has to the living principle in another.

Gravitation, Attraction, or whatever name be given to that which induces to Motion, depends upon the Principle of Affinity.—Some may object, that there is a difference between that which induces to animal, and that which induces to mechanical motion—As well may they say, that there is a difference between that which induces to motion, when I walk and when I run; the latter being no more than the first motion increased: for upon the principle of affinity or attraction, depends all motion; as much mine when I walk or run, as the needle's when applied to the loadstone, or alkalies when applied to acids.

In some instances of the perfect Union, there is the most lively Action; matter meeting and uniting to matter with such velocity as to produce heat, and sometimes fire.—There are other bodies which are so volatile, and have a quality so much resembling our notions of life, that men are forced to give them the same general name, i. e. Spirit; though they affect to have a different meaning, which they cannot define.

We may try the art of Chymistry in vain, to separate the component Parts of Bodies, until we find an uncompounded particle of matter, which may be strictly said to be *SU*
GENERALIS—but, as far as our investigations can go, we find every part possessing the living principle. We cannot separate it from matter—to us they are the same: for what is indivisible, is to us infinite.—Matter and the living principle, therefore, are co-existent: the one as durable as the other, and both from everlasting to everlasting.—The Ignorant and Proud may exclaim, are we nothing more than finely-qualified matter! Is there no other distinction between

between us and the brute creation, than the same matter more nicely organized! Notwithstanding the envied place of distinction man supposes himself to hold in this world, compared to other matter in it; notwithstanding his impious boast of such a near relation to the great **UNIVERSAL CAUSE** of this and all worlds, as to suppose himself, after the Angels, his first and most perfect work--he is no more than the first order of animals.

C H A P. III.

THE GENERATION AND CHANGE OR DEATH OF MATTER.

LIFE is generated, continued, and terminated, upon the same principles in what are called inanimate, as in animate things.

None will dispute that the production of vegetable Life, is, by the action of generation, the coalition of male and female. Their death happens from the same causes as in animals, by accidental impairs of their structure, or by time which wears them out. By accident, I mean what we call the irregular motions of the elements, either acting directly of themselves, or indirectly through other bodies.

I have said what we call **IRREGULAR MOTIONS**, as they are not in reality **IRREGULAR**, since they answer the intention of the **UNIVERSAL AGENT**, in making things comport with that state of frailty which he, no doubt, destined for this world.—By decay of time, I mean that the vital principle, which is joined to all matter, may be made to be stronger than the matter in any one form, and overact it; or, the operation of each upon the other, may, in time, weaken both, so as to make them mutually disposed to separate, and thereby answer the intention before mentioned,

tioned, of making things consistent with the state of frailty, for which this world was destined from the beginning.

That Mineral and other Substances generate, follows from their decaying.—That they are possessed of the living principle, we have said, follows from their motion and change of form. May it not be presumed, from their connection with other animated things, and their likeness to them in every other essential, that they are like them also in their generation and death? For Nature maintains an uniformity in all her operations.—The seeds of several vegetables, and their mode of generation, have been lately discovered; but before these discoveries, it was not doubted that they had seeds because they were too small to be observed by the naked eye. Their analogy, in every other essential, to other vegetables, went for a proof of their likeness to them in this particular.

As the Principle of Life in the things we are treating of, is united to matter infinitely small, so we cannot discover with our eyes, the parts of generation, nor the process, as in animals and vegetables.—In such cases we must recur, for our arguments, to established principles and analogy; and the reasoning here, must be as valid as the reasoning upon facts: if there be error, the error will be in the reasoning; for what is well established as a principle, becomes a standing fact in all cases which apply.—Have we not then just grounds to suppose, nay, does it not amount to demonstration, that life is generated and terminated by the same means here, as we know it to be in other living things?—Otherwise we must say, that this is an exception, and the only exception, to a general principle, viz. THAT NATURE MAINTAINS AN UNIFORMITY IN ALL HER OPERATIONS.

When an human Body ceases all those Motions which constitute the action proper to man, we make a gross comparison between it and a body in the ACTION OF MAN, and

say it is dead.—When we see a limb removed from an human body, we make a gross comparison between it and the body to which it was just before united ;—the action in the one being apparent to the eye, the other not—we say the limb is dead.—Here we see how far a single word, the word DEAD, imposes upon our judgement.—If words were away, which here as in many other cases, and in all, more or less, act as an opiate to the mind, from the obstinate habit we have of receiving sounds for things which they do not describe ; if words were away, then our minds would combine ideas, in the case which I have just mentioned, as follows, and our judgement would approve the combinations.—If life extends to all matter, it must extend to all matter in it's pristine state, i. e. uncompounded ; so it must extend to matter small beyond our comprehension. Life cannot depend upon composition. If any doubt, let them try the possible effects of compounding, and they will find them to be all gross; it gives a gross variation to the form, size, motion, &c. of matter ; but it is gross only : for in it's own pristine state, &c. each particle of matter is retained in the compound; though the compound is capable of deceiving our senses upon a superficial view.

Suppose a number of men crowded together, making a form which, in Tactics, would be called a solid square, and their motion united in one point ; this square is composed of men, files, companies, regiments, brigades. Now, suppose a Being whose organ of seeing is so gross, that to it this square appears as small as the most minute object does to ours, he will see but one form, size, and motion, and those altogether different from the size, motion, and form, which each individual gives in to this compound ; and hence may conclude as reasonably as we do in other things, that this square has but one life and one motion.

Combination then cannot destroy matter and motion : but by uniting various forms, and of course various motions,
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the compound motion becomes as different from that which each particular motion contributes, as the compound form does from that which each particular form contributes.

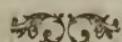
Every thing presented to our view is a compound ; and our own bodies perhaps the most compounded of all.---Like our military analogy, it may be said to be composed of a great number of individual substances.—If a limb be lopped from it, that limb loses the motion of the body, which before it helped to compose, THE MOTION PROPER TO THE MAN COMPOUND ; but all the matter which enters into the composition of the limb retains it's pristine motion, form, &c. so a company or regiment drawn from our square, loses the motion of that body, which it before helped to compose, the motion proper to a solid square: but every individual which enters into the composition of that company or regiment, retains his own motion, form, &c.

A cessation of that motion which constitutes THE ACTION PROPER TO MAN we have called Death ; and, contenting our minds with the sound of that word, we take it for granted that the operation of death has happened to every particle of matter, which went to the composition of that form whose motion has just ceased, though parts of that body enter immediately into the composition of vegetables and animals, and even into another body like it's own.

It would be well to prevent the further imposition of this WORD, to give the operation of death it's proper name, i. e. a name which will be a better sign of it's operation, and call it a CHANGE ; for death, in the sense which it is used, cannot happen any more than Eternity can end.---Matter can change it's form, or, to speak more properly, the form of matter can be changed to our gross senses; but matter cannot cease to be matter, and as life is co-existent with matter, life cannot cease. Death may be as properly applied to the beginning of life as to it's termination ; for the beginning of

of life (or motion) in one form, has it's origin in the death, or what we wish to be called the **CHANGE**, of another form. Emerging from one kind of existence into another is **LIFE BEGINNING**; emerging from one kind of existence into another is **LIFE ENDING**: hence the propriety of the word **CHANGE** in the place of the word **DEATH**. This **CHANGE** is constantly happening in all matter, and in all causes and effects are the same.

Every thing is possessed of the same living principle. That which causes motion in one form, causes it in every form of matter, though the same principle does not cause the same motion or action in all; the difference lies in the difference of compounding. Matter in one form or compound is actuated by this principle, in a manner conformable to that particular compound or form. The perfection or imperfection of this motion, if we have a right to say that one kind of motion is more perfect than another, is owing to the perfection or imperfection of it's compounding. But we should speak with diffidence on this head; for how can we judge of the imperfection of that motion which exists in bodies whose bulk and motion are too small to make them evident to the naked eye, and of which we can only say, that they are matter, and have motion? Their smallness should not be an argument of their imperfection, any more than the largeness of body and motion in another, should be an argument of their imperfection. Every thing which we see partakes of infinites, and that which is infinite extends, on all sides, to small as well as to large---great and small are words adapted to finite; in infinite there is no great or small.



C H A P. IV.

THE FINER COMPOSITION AND ACTION OF MATTER.

THE mistaken pride of man may ask, Is there no difference in the SOUL which informs my body, and the living principle which actuates matter in other forms?---I answer, that, if by SOUL is meant something distinct from matter, or that which is immaterial applied to the matter of my body, and thereby inducing motion or action, I cannot comprehend the question; because I can have no ideas of that which is immaterial.---It must be a something, or rather a nothing (for something is matter) which is not known in philosophy or reason; and, we would wish to speak here of things only which belong to reason.

Reasoning is no more than the finest operation of matter which we know of; and we can reason upon nothing but matter.—Reasoning is the comparing of material impressions or ideas.---We cannot reason without comparison. The soul, in the sense of my question, is not matter; we know NOTHING that is not matter; we have NOTHING to compare things with but matter; we cannot, therefore, reason upon soul in the sense of my question, for want of comparison. The word SOUL gives us another instance of the imposition of words. We cannot realize what our senses cannot perceive, what our reason cannot operate upon and assent to. Reason, in vain, may try it's operation upon SOUL; it will find nothing to compare it to, and can therefore convince us of NOTHING, but that the soul, in the sense of my question, is NOTHING. If the soul be not matter, it is NOTHING.

Let me ask any one how I can reason upon NOTHING? And with what kind of propriety or truth I can say, that I believe I am possessed of a soul which my reason cannot act upon,

upon, therefore cannot assent to? For when I say I believe a thing to be, I mean that my reason assents to the existence of that thing; I cannot believe what my reason cannot comprehend and assent to, for I can have no idea of it. Ideas, we have said, are the impressions of matter upon our minds, and reasoning the comparing of those ideas; until then you add matter to soul, i. e. give unto some matter the name of soul, and define what kind of matter you mean by that name, we cannot reason upon it.

I must therefore answer my querist in a way as little gratifying as before, viz. that reason knows no difference in the nature of that which actuates him, and that which actuates a vegetable, an oyster, or a stone.—The different action depending upon the different composition of matter.

Every compound has its proper action assigned to it. If man had confined himself to this, and had not strayed in romantic and visionary speculation, from what he calls the natural into what he calls the moral world, he would long before this have come to a proper knowledge of himself. The word SCEPTICISM would have no use in our language, for then the mind would have no dealing with that which it could not operate upon and assent to. Man, then, would better support his real character of dignity, than by impiously supposing himself to be, what he is not, but two removes from the great UNIVERSAL CAUSE. We do not conceive the frog to be greater, because in his own proud imagination he had swelled himself to the size of an ox. May we not justly suppose that man stands in the same ridiculous view to those, whose rank in creation as far exceeds his, as his does the frog's, when he swells himself in his own proud imagination, to a size that is not his?

But what is this universal principle, which actuates all bodies, all matter?

Before we answer this question, let us ask ourselves, what is the strength and extent of our reason, that we may not, by overstraining or going beyond it, be found groping in the dark? Let us try how far reason can go in search of the UNIVERSAL CAUSE, upon which motion depends: but, in this search, let us be governed by reason, and let alone all that is beyond that, for WHERE THE END OF COMPARING IS, THERE THE END OF OUR KNOWLEDGE MUST BE. That which we cannot know, our reason tells us, is what our composition was not designed to know.

We can use no name that will give us an idea of God as a BEING. All that we can know of him must be from his action; the most applicable name that we can use, is that which best describes this action; I would then prefer this, the UNIVERSAL CAUSE.

That there is a God we believe from this, THAT THINGS ARE, AND THAT THEY MOVE. Things could not be, and cannot act without a CAUSE. This negative argument must be decisive in proof of a God. What cannot be otherwise, must be so. If we could use affirmative arguments, then could we define the nature and powers of God, which would be to deprive him of his great characteristic INFINITE. This argument is short, yet longer than was necessary, because WORDS at all were unnecessary. We have complained of language, as affording the most imperfect signs of thoughts; this is a subject that will scarcely apply to words at all, but belongs entirely to the thoughts.

The best idea that my mind can have of God, is from the idea it has of TRUTH; wherever I find this, I feel in myself an instantaneous glow of ineffable love, reverence, and adoration, which tell me, this must belong to the UNIVERSAL CAUSE, this must be God. These sensations I cannot convey to others, because words cannot be made to have relation to them. If I could, I should have a power which
God

God only has; the power of communicating himself. It is therefore a subject that belongs to the thoughts only; a subject in which words only tend to lead us on from error to error, and would keep us forever in darkness, and under the harrow of doubt, hesitation, and uncertainty.

Wherever TRUTH is, and is rightly understood, it cannot be disagreeable, but must and will, in good minds, excite all those emotions which I have mentioned. But whenever I impiously attempt to identify God,—to give him a likeness to any thing which I can conceive of,—to shape him to my comprehension, and fashion him after the frailty of my senses, I cannot feel that satisfaction, love, reverence and devotion; because, in this profane way of reasoning, I do not find TRUTH, I do not feel my GOD. And I wish that all men would be certain, that they do not entertain all that love reverence and devotion for words which are meant for GOD. As the UNIVERSAL CAUSE is infinite, so it is incomprehensible. Every thing that belongs to it, must, like itself, be infinite and incomprehensible. What is finite cannot comprehend infinity; the one being composed of parts, the other not. Here then REASON art thou bounded!

Let us now try the extent of reason in answering our question, What is this universal principle which actuates all matter?

If we attempt to trace the living principle to its origin, which we must do to know its nature, we shall find the pursuit to be vain; we cannot carry the art of de-compounding so far as to find one uncompounded particle of matter, and in every division we find the living principle inseparable.—That which is not divisible, must be one. Matter and life are not divisible, though the attempt be made as far as human understanding can go, and all that is beyond that, is, to us, infinite. Matter and life are then to us,

one and the same thing ; and the word INNATE has as much meaning as the word INSTINCT, in the sense they are used, both affect to hold a distinction that does not exist. If a thing has a quality which cannot be separated from it, that quality is a part of the thing, is one with it, and cannot be taken from it without destroying the nature of matter, which cannot be done.

Though, in pursuit of the origin of life, we find ourselves lost in the great ocean of infinity ; yet we find, what we before hinted, that matter and life are one and the same thing. What we call Soul then, or the power of thinking, reasoning, or reflecting, is no more than the operation of matter, acquiring that power of operation from it's particular kind of composition ; and the great difference we observe in the action of matter is owing to the great difference of composition.

Though we cannot know exactly how the action of thinking is performed ; yet, by tracing the less perfect action of matter, and comparing it with that which in us is it's most perfect action, we may obtain some idea of the operation of thinking : we shall then see that it is performed by the accordance of matter to matter ; and all the phenomena of this surprizing action of matter is to be accounted for from the delicate variety of composition or form.

Let us now try how far we can trace the effects of conformity, by beginning with it's gross effects, and pursuing it to it's finest.

An oblong square of six feet by two will receive my body into it, but not a coach. The eye of a needle may be made to receive the point of another, but not it's head. Artists, in the fine branches of mechanical sciences, carry this accordance of form in matter to a nicety almost impervious to an untutored eye. The action of matter in a spring is upon

this principle. Suppose an extended piece of iron or wood, of a determined length and breadth, the matter of it's composition has an equal accordance in conformity on all it's sides; let the two ends of this rod be drawn towards each other, and you thereby make the conformity less on the one side by what is to it preternatural compression, and less on the other side by preternatural extension; the moment the force which held the rod in this tortured position, is removed, it recovers the place which the various forms of matter in it's composition require and induce.

Having discovered the principle of action in a spring, it would be easy for us to show the cause of all the harmony of motion which we admire in a clock. These things give us an idea of the use which mankind are capable of deriving from this principle.—What surprizing effects he can produce simply from the variety of form which he finds in or gives to matter. Next, let us trace this principle in things where it acts more perfectly, and where, for this reason, it's operation recedes further from our gross senses.

We shall find that it is upon this principle the circulation which is necessary to vegetable existence is carried on.

The matter which is proper for the nourishment of a tree, is received into it by it's roots, it's leaves, and it's bark: all these are provided with vessels, whose mouths, from their particular shape, are calculated to receive matter of a particular shape only, and refuse matter of other forms which would be injurious to the tree. It is also furnished with excretory vessels of a shape calculated to return to the earth and air, particles of matter of a particular shape, which is it's superfluous matter (from which the still finer vessels have separated and retain it's finer parts) and these excretory vessels will refuse matter of another shape, and which is necessary for the increase and existence of the tree.

Now let us trace the operation of this principle in our own bodies. And here that circulation which is necessary to it's animal existence, is carried on in the same way as in the tree, the difference being altogether unessential. Nutrition, respiration, digestion, secretion, and excretion, in short all that we can mean by circulation, obtains alike in each : but here, as it was necessary for our welfare, we are better acquainted with the operation of this principle in our animal existence, but in our mental existence (if I may, in complaisance to prejudice, use a distinction that has no meaning) it is more obscure. We observe in our own bodies a considerable variety of matter in the form of fluid, which it's functions can separate from only two substances, bread and water ; this is performed altogether by the conformity which matter in the form of a vascular solid has to matter in the form of a fluid, the mouth of a particular vessel corresponding to the shape of a particular fluid, whereby it is rendered capable of receiving that fluid and refusing any other. The particular organization of matter in my eye, renders it capable of receiving and conveying to my mind certain ideas or sensations, which I call seeing. The particular composition of matter in my ear, renders that organ capable of receiving and conveying to my mind certain ideas, or sensations, which I call hearing; and so of the organs of tasting, smelling, and feeling.

It would remain for us now to examine the composition of that matter which is capable of comparing the several sorts of sensations or ideas. In attempting this we should have to do with organs too small and complex to distinguish and explain ; but if we allow that matter can do all that we have mentioned--that it is capable of conveying ideas to the mind--shall we judge that matter of the mind is incapable, of itself, of comparing and judging of them ? Surely that kind of organization which is capable of conveying ideas to the mind, cannot, in it's mechanism, fall so infinitely short of that kind of organization which is capable of comparing

paring and judging of them, as to make it impossible, granting that matter can do the one, but that it may perform the other. We allow no souls to brutes ; yet some of them have these organs in greater perfection in some things than we have. If it is not to be doubted that matter thus organized can effect such things in them, shall we doubt that matter more completely organized, may be capable of performing the operation of thinking in us?

Matter in a particular compound has it's particular use. I cannot receive the sensations of seeing with my ears, and VICE VERSA. If the operation of thinking were done in me by that which is not matter, there must be such an infinite difference between matter and it, as to admit of no relation or dependence ; for what can be more opposed than spirit and death ? And that all-pervading SOUL could as well look through my ears as my eyes, and VICE VERSA. If I had that in me which actuated my body, and which is not matter, then that IMMATERIAL SOMETHING (for I must speak absurdly if I speak at all on this subject) would have communion with other IMMATERIAL THINGS, whereby I should obtain some ideas of, and have some acquaintance with, THINGS IMMATERIAL. But Mr. Locke tells us, that THOUGH WE CANNOT CONCEIVE OF A LINE WHICH HAS LENGTH WITHOUT BREADTH, YET WE HAVE IDEAS OF DISTANCE UNCONNECTED WITH MATTER, which is the same as length without breadth.

It is with profound deference that I use his name, who has so far explained the operation and powers of the human mind. If it were possible for any thing human to have an immaterial conception, a mind so clear and capacious as his, certainly most deserved the envied distinction of becoming the residence of such a singular guest.

If this honored man have any where darkened his subject, by wandering from material to IMMATERIAL THINGS, which

which is wandering from the bounded road of reason, into the wild labyrinths of fancy, it has been owing to those imperceptible prejudices, which steal upon us and rivet themselves from long habit, which attack us in our infancy, when we cannot be upon our guard against them, nor able to repel them; thence growing up with us, they get wrought into our composition, so that he who thinks he has none, generally has the strongest; but for this, Mr. Locke's mind, in that channel in which it was directed, would have been alone capable of leading mankind out of the cloud of error, which had so long enveloped him.

Permit me, with modesty, to examine the truth of this proposition, THAT WE CAN CONCEIVE AN IDEA OF DISTANCE UNCONNECTED WITH MATTER.

The ideas which I get of distance is from mensuration and numeration; the one means a division of matter into certain parts, the other is multiplying of words first derived from matter, being general names given to it: as to the fingers on my hands I give certain names, descriptive of their number, which then simplified is the multiplication of matter.

I have an idea of the distance from one end of my room to the other, by the number of paces which describe it. I have an idea of the distance from Philadelphia to Boston, by the number of miles into which the road has been divided. Having thus obtained an idea of distance from the division of matter, I attempt to obtain an idea of the distance between this earth and the sun, by the ideas of distance which I have acquired in the division of matter: but does it follow from this, that I have an idea of immaterial distance? Granting this, would be giving parts to infinite, would be to say that I may carry a material impression into infinity. The idea which I have acquired of the length of a certain part of matter, divided by a certain measure, remains with me, and enables

enables me to compare it with other lengths, or to say that two and two make four.

If I see my Cane (which is reasoning upon the same ground) standing against the wall of my room, and it afterwards be removed, I have still an idea of the place it occupied and the distance it marked upon the wall—Does it follow, because the cane is removed, that my present idea is from an immaterial impression? No. The idea of the cane and the idea of the wall it stood against, which was annexed to it, still remain in my mind.

If any man still think that he has an idea of immaterial distance, let him suppose himself the only matter in creation, or that he has any knowledge of, and then ask himself if he thinks he could have any idea of distance, not allowing himself to divide his own body into parts or distances.

But it may be said, that though I could prove that ideas are the impressions of external matter upon the matter of my mind, and thereby prove that thinking is the operation of matter; yet I cannot prove that the issue of that operation is material, i. e. that judgement which is the result of comparison, is material. To this I have only to answer, that I can have no idea of any deduction from matter being any thing else than matter; unless I could suppose that matter could beget spirit. If I could show the whole operation of my mind, then I should prove a Soul, or a SOMETHING that is not MATTER, for I know myself to be Matter; to know the whole operation of it, must suppose an intelligence in me, which is above me (I add inconsistent with me) and is not Matter. If such an intelligence was in me, it would prove itself in this way.

But we ought to have nothing to do with suppositions; our business is only to see how far reason can go, and what is beyond that, is, and ought to be, no concern of mankind.

kind. I deny a Soul, because reason shows it to be nothing but a word; but if by Soul is meant the general principle of motion or life, then I say, after tracing matter as far as reason can keep sight of it, I cannot separate it from life.— All that is beyond that, is infinite; so to me, Matter, Motion, Life, Spirit, Soul, (or whatever name be given to Motion) is one and the same thing.

Why should it be so hateful to our pride, the denying of a Soul, which we have proved is denying **NOTHING**, and trying how far we can account for that, which has unmeaningly been called Soul? If the operation of matter be made to have the same effect as the operation of that which has been called Soul, and which might as well have been called Nothing (for take the word Soul away, and Nothing remains) why should we not suppose our state as dignified as if we suppose our bodies actuated by and possessed of **NOTHING**? No reasonable creature can have this for his objection. It must then be, because it shows him to be actuated by the same principle that actuates the animal creation and other matter; and not dwelling enough upon the difference of composition, which give their motion and his---he feels his pride hurt by the likeness.

The difference between the Brute and us, we hold to be very great; the difference between us and the very next Being above us, may be greater; and all too little, to make a mark in the great map of the universe. Would we not complain of pride and injustice in this next Being, should it affect to hold us in the same dishonorable view that we do Brutes? They, as much as we, answer the design of the Universal Cause.

From all that has been said, it follows that what we call Soul or Life, and our Bodies have the same origin; the one as much as the other is a part of, and if parts of, belong to, this world, this earth, and its atmosphere.

It becomes then very importantly necessary that we endeavour at some investigation of this world, from which we find ourselves to be derived; that we discover it's real nature; and that the nature of it be different from what has been supposed; otherwise the prospect before us will be melancholy and hateful.

It is certain that a state of Annihilation in one sense, is destined for us; but a state of complete annihilation,—annihilation in that sense which is generally annexed to the word, cannot happen any more than eternity can end.

C H A P. V.

T H E E A R T H.

ALL that enters into my composition is derived from the Earth, and to it, as to it's origin and source, it must return. It would then be a great absurdity in me to suppose that which is the source of all being and life in this world, should be without life itself. If I suppose my Being the most perfect, because it is the most compounded, of any on this earth, must I not suppose that Being which is my source, and which is the source of all Beings here, must be proportionably more perfect than me, as my whole is more perfect than any one individual part of me; I bearing the same relation to the earth, which that individual part of me does to my whole?

The first thing observable in the Earth is Matter, the second Motion, and both these are various beyond our comprehension. Of the powers of this great compound, we know no more than that it is of a degree above us, beyond the reach of our knowledge to conceive; for as our comprehension is limited in things small, so it is in things large:—**I N F I N I T E E X T E N D S T O A L L S I D E S, G R E A T A N D S M A L L**

SMALL ARE THE SAME. All that we can judge of it, is from those parts of it whose composition are of a size more or less fitted to our's, and thereby noticeable to our senses. From these we find that there is a continued circulation going on in it—a perpetual, and as far as we can observe, a regular exchange of matter between it and it's atmosphere; of which the exchange of matter between the earth, atmosphere and us, is an epitome. We observe that the animal, vegetable, and mineral kingdoms, are necessary to this circulation, and are to it, perhaps, what the excretory organs, the organs of perspiration, are to us.

This Globe, let us view it which way we will, is in large, what a part of it, a man for instance, is in small. The distinct organized beings, which enter into our composition, are too small to be observed by us; but we, bearing the same relation to the earth, have some knowledge of those parts of it, whose composition are, from their size, fitted to our senses.

As all Matter centers in this Globe, so all Life centers in it; it's faculties deriving the benefit of all the faculties that are a part of it, must, as before observed, be above our conception.

The Earth, beside the kind of motion which we have been speaking of, has a general, a total, or what may be called it's compound motion; a motion in which all it's parts unite.—This motion shows us that the universe is not comprised in the globe; for this motion must have the same kind of relation to, and dependence on, some other body, that the motions of our bodies have to the globe.

Besides, the work of that power which is infinite, must bear a proportion to the power, and be infinite also. Our knowledge can compass this earth, and observe it's bounds; but our knowledge cannot compass that which is infinite.

There must then be some body to which this globe bears a relation, similar to that which our and other bodies bear to it. All that we can venture to say of it, is, that it must have a likeness to this, comparing great things with small; for as the Earth depends upon it, so it must be a part of it's composition. All that we see of the stars, &c. must be sister parts with this world of one great body, which is their center, as this earth is of our and other bodies belonging to it.

So far reason can go by fair comparison---how much further creation and dependence go, in speaking of it, we must approach nearer to hypothesis.---This much we know, that as it is beyond our comprehension, so it is to us Infinite.

But as Creation swells into Infinite, we may conclude, that this harmony and dependence, from the harmony and dependence which we observe in things that we can see, accompany it into Infinite.---Creation then, as far as we can trace it, would appear to be one INFINITE MASS OF MATTER.

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